Chapter - II
Geographical Personality of the Vidarbha Region.

2.1 Introduction.
2.2 Location and Boundaries.
2.3 Historical Background.
2.4 Physiography.
2.5 Geology and Minerals
2.6 Drainage Pattern
2.7 Ground Water
2.8 Climate.
2.9 Soils.
2.10 Natural Vegetation.
2.11 Summary.
Chapter - II
Geographical Personality of the Vidarbha Region

2.1 Introduction:

In the first chapter, meaning of agriculture and agricultural geography, importance of the study of agricultural geography, the place of agriculture in the national economy, agricultural development in India, place of agriculture in the economy of Maharashtra State, choice of the region and topic aims and objectives of the present study, data base and methodology, review of literature and chapter scheme, these points are discussed. This chapter is mainly concerned with location and boundaries, historical background, physiography, geology, drainage, climate, soil types and natural vegetations of the study region.

2.2 Location and Boundaries:

Administrative point of view Maharashtra state is divided into six administrative divisions namely, Konkan, Nashik, Pune, Aurangabad, Nagpur and Amravati. The Nagpur and Amravati division collectively known as Vidarbha Region. This region was formerly a part of Central Province and Berare. A subsequent bifurcation of bilingual states produced some more states in India. Thus the present state of Maharashtra was born on 1st May 1960. In which Vidarbha region and Marathwada region included as a part of Marathi speaking people in newly created Maharashtra state. Hence from 1st May 1960 onward Vidarbha region is the integral part of Maharashtra State.1

The Vidarbha region extends from 18° 42' N to 21° 44' N latitudes and 76° 00' E to 80° 55' E longitude. The study region is bounded to its north and north-east by Betul, Chindwara, Seoni and Balaghat districts of Madhya Pradesh and to the east and south-east it is bounded by Durg and Bastar Districts of Chhattisgarh State. To the south it is bounded by Andhra Pradesh
VIDARBHA REGION
LOCATION MAP

INDIA

MAHARASHTRA

VIDARBHA REGION

MADHYA PRADESH

NAGPUR

WARDHA

BHANDARA

CHANDRAPUR

GADCHIROLI

ANDHRA PRADESH

JALGAON DIST.

BULDHANA

AKOLA

YAVATMAL

CHHATTISGARH

JALNA DIST.

PARBHANI DIST.

HINGOLI DIST.

NAMED DIST.

ANALYSIS

Index

State Boundaries

District Boundaries

District Headquarters

Map No. 2.1
and the southern boundary of Vidarbha region is delimited by Painganga and Pranhita rivers and to the west are Jalgaon and Aurangabad district of Maharashtra State.

The region includes nine districts i.e. Buldhana, Akola, Amravati, Yavatmal, Wardha, Nagpur, Bhandara, Chandrapur and Gadchiroli. Recently two new districts namely Gondia and Washim has been created with the bifurcation of Bhadara and Akola district respectively. So today total number of districts in Vidharba region is eleven. But because of non-availability of time series data for recently created districts Washim and Gondia, the present research work has been restricted to nine districts only. (Map 2.1)

In the administrative set up, region is divided into two divisions, firstly Amravati division, it includes Amravati, Akola, Washim, Yavatmal and Buldhana and secondly Nagpur division is made of Nagpur, Wardha, Bhandara, Chandrapur, Gadchiroli and Gondia districts. Before the reorganisation in 1956, the region was belong to Madhya Pradesh, further in 1960, the region was included in Maharashtra state. In between the region was part of bilingual Bombay state.

The total geographical area of Vidarbha region is 97404 sq.km. In which the total geographical area of western Vidarbha i.e. Amravati division is 46027 sq.km. while total geographical area of eastern Vidarbha i.e. Nagpur division is 51377 sq.km².

**Table No. 2.1: Area Occupied by Different Regions in Maharashtra State.**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Name of the Region</th>
<th>Area in Sq.Km.</th>
<th>% to Total Geographical Area of Maharashtra</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Konkan</td>
<td>30728</td>
<td>9.98</td>
</tr>
<tr>
<td>2.</td>
<td>Western Maharashtra</td>
<td>89853</td>
<td>29.21</td>
</tr>
<tr>
<td>3.</td>
<td>Khandesh</td>
<td>24915</td>
<td>8.09</td>
</tr>
<tr>
<td>4.</td>
<td>Marathwada</td>
<td>64813</td>
<td>21.06</td>
</tr>
<tr>
<td>5.</td>
<td>Vidarbha</td>
<td>97404</td>
<td>31.66</td>
</tr>
<tr>
<td>6.</td>
<td>Maharashtra</td>
<td>307713</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Source: Complied by Author.*
The table No. 2.1 reveals that 31.66% of total geographical area of Maharashtra state is occupied by Vidarbha region. As far as geographical area is concerned Vidarbha region rank first in Maharashtra state. Today in all there are 353 tahsil places, 378 towns and 43722 villages are in Maharashtra state. Out of which 119 tahsil places 105 town and 15877 villages are located in Vidarbha region. Out of total villages 2365 villages are deserted and 13512 villages are inhabited.

2.3 Historical Background:

Coming to historical times, we find that the country was included in the empire of the Great Ashoka. The thirteenth rock edict of that great emperor mentions the Bhojas as the people who follow his religious teachings. The royal family of Bhoja was ruling over Vidarbha in ancient times. Since then the peonmaned Bhojakata (modern Bhatkuli in the Amravati district) is mentioned in a great of the Vakatakas. An inscription probably issued by the Dharmamahamatra placed by Ashoka in charge of Vidarbha, has been found at Devatek in the Chanda district (Chandrapur District). It records an order promulgated by the Dharamamahamatra interdicting the capture and slaughter of animals. It is dated in the fourteenth regnal year, evidently of Ashoka.

After the overthrow of the Maurya dynasty in circa B.C. 184, the imperial throne in Pataliputra (Patna) was occupied by the Senapati Pusyamitra, the founder of the Sunga dynasty. His son Agnimitra was appointed Viceroy of Malva and ruled from Vidisa, modern Besnagar, a small village near Bhilsa. Vidarbha, which has seceded from the Maurya Empire during the reign of one of the weak successors of Ashoka was then ruled by Yajnasena. He imprisoned his cousin Madhavasena, who was a rival claimant for the throne. The sister of Madhavasena escaped to Malwa and got admission as a handmaid under the name of Malavika to the royal place. Agnimitra, who had espoused the cause of Madhavasena and sent an army against the king of Vidarbha, fell in love with Malavika and married her. The Malava army
defeated the king of Vidarbha and released Madhavasena. Agnimitra then divided the country of Vidarbha between the two cousins, each ruling on one side of the Varada (modern Wardha) Eastern Vidarbha thus comprised Wardha, Nagpur, Bhandara, Chanda, Seoni, Chindvada and Balaghat districts. It was bounded on the east by country of Daksina Kosala (Chhattisgarh). From the Mahabharata also we learn that the province of Venakata bordered on that of Kosala. The story of Malavika forms the plot of the play Malavikagnimitra of the great sanskrit poet Kalidasa.

Kalidasa does not state to what royal family Yajnasena and Madhavasena belonged and these names do not occur anywhere else. Still it is possible to conjecture that they may has been feudatories of the Satavahanas. From the Hathigumpha inscription at Udayagiri near Bhuvaneswar, we learn that Kharavela, the king of Kalinga, who was a contemporary of Pusamitra, sent an army to the western region not minding Satakarni. The latter evidently belonged to the Satavahana dynasty as the name occurs often in that family. Kharavela's army is said to have penetrated up to the river Kanhabenna and struck terror in the hearts of the people of Rsika. The Kanhabenna is the river Kanhan which flows about 10 miles from Nagpur. Kharavela's army, therefore, invaded Vidarbha. He knew that as the ruler of Vidarbha was a feudatory of king Satakarni, the latter would rush to his aid when Vidarbha was thus invaded, the people of Rsika (Khandes) which bordered Vidarbha on the west, were naturally terrorstriken. No actual engagement seems however to have taken place and the army retreated to Kalinga perhaps at the approach of the Satavahana forces.

The Satavahanas, who are called Andhras in the Puranas, held Vidarbha for four centuries and a half from circa B.C. 200 to A.D. 250. Their earliest inscriptions, however, which record their performance of Vedic sacrifices and magnificent gifts to Brahmanas are found in the Poona and Nasik districts. Towards the close of the first century A.D. they were ousted by the
Saka Satraps from Western Maharashtra. They then seem to have found shelter in Vidarbha, but in one of the Nasik inscriptions Gautamiputra Satakarni, who later on exterminated the Sakas and re-occupied Western Maharashtra, called Benakatakasavami, the lord of Benakata. No satisfactory explanation of this expression was possible until the discovery of the Tirodi plates of the Vakataka king Pravaresena II. These plates record the grant of a village in the Benakata, which must have comprised the territory on both the banks of the Denna or the Wainganga, now included in the Balaghat and Bhandara districts. Gautamiputra was, therefore, ruling over the country of Benakata (or Venakata), before he reconquered Western Maharashtra from the Saka Satrap Nabhapana.

Gautamiputra was a very powerful king whose kingdom extended from the Arabian Sea to the Bay of Bengal and comprised even Malva, Kathiavad and parts of Rajputana in the north. His son Pulumavi was similarly the undisputed master of the whole Deccan Yajnasri also, a later descendant of the family, retained his hold over the whole territory as his inscriptions and coins have been found in the Thana district in the west and the Krishna district in the east. Two hoards of Satavahana coins have been found in Vidarbha, one in the Brahmapuri tahsil of the Chanda district and the other at Tarhala in the Mangul tahsil of the Akola district. The letter board which was discovered in 1939 about the middle of the eighth century A.D. the Early Chalukyas were overthrown by the Rastrakuta. No inscriptions of the Early Chalukyas have been found in Vidarbha, but their successors the Rastrakutas have left several records. The earliest of them is the copper-plate inscription of Krishna I discovered at Bahandak and dated in the Saka year 694 (A.D. 772). It records the grant of the village Nagana to a temple of the Sum in Udumbaramanti, modern Rani Amravati in the Yavatmal district. Thereafter several grants of his grandson Govinda III have been found in the Akola and Amravati district of Vidarbha. The Rastrakutas of Manyaketa
and the Kalacuris of Tripuri were matrimonially connected and there relations were generally friendly. But in the reign of Govinda IV, they became startined. The Kalacuri king Yuvarajadeva I espoused the cause of his son-in-law Baddiga-Amoghavarsa III, the uncle of Govinda IV and fought on the bank of the Payosni (Puna) 16.093 km. (10 miles) from Achalpura, between the Kalacuri and Rastrakuta forces, in which the former became victorious.

The Rastrakuta were succeeded by the Chalukyas of Kalyani. Only one inscription of this family has been found in Vidarbha. It is the so-called Sitabuldi stone inscription of the time of Vikramaditya VI. From the account of Vinayakrav Aurangabadkar this record seems to have originally belonged to the Vindhyasana hill at Bhandak. It is dated the Saka year 1008 (A.D.1087) and registers the grant of some nivartanas of land, for the grazing of cattle, made by a dependant of a feudatory named Dhadibhandaka. Another inscription of Vikramaditya’s reign was recently discovered at Dongargarh in the Yavatmal district. It sheds interesting light on the history of the Paramara dynasty. It shows that Jagadeva, the youngest son of Udayaditya, the brother of Bhoja, left Malwa and sought service with Vikramaditya VI, who welcomed him and placed him in charge of some portion of Western Vidarbha. This inscription is dated in the Saka year 1034 (A.D. 1112).

Though western Vidarbha was thus occupied by the Later Chalukyas, the Paramaras of Dhar raided and occupied some portion of eastern Vidarbha. A large stone inscription now deposited in the Nagpur Museum, which originally seems to have belonged to Bhandak in the Chanda district, traces the genealogy of the Paramara Prince Naravarman from Varirisima. It is dated in the Vikrama year 1161 corresponding to A.D. 1104-05, and records the grant to two villages to a temple which was probably situated at Bhandak, for some of the places mentioned in it can be identified in its vicinity. Thus Mokhalipataka is probably Mokhar, 80.47 km (50 miles) west of Bhandak. Vyapura, the name of the mandala in which it was situated, may be repre-
sented by Vurkanv 48.280 km. (30 miles) from Mokhar. After the downfall of the Vakatakas, there was no imperial family ruling in Vidarbha. The centre of political power shifted successively to Mahismati, Badami, Manyakheta and Kalyani. Men of learning who could not get royal patronage in Vidarbha, had to seek it elsewhere. Bhavabhuti, who ranks next to Kalidasa in Sanskrit literature, was a native of Vidarbha. In the prologue of his play Mahaviracharita he tell us that his ancestors live in Padmapura in Vidarbha. As stated above this place with the village Padampur in the Bhandara district. With the downfall of the eight century when Bhavabhuti flourished there was no great king ruling in Vidarbha. Later, he obtained royal patronage at the court of Yasaovarman of Kanauj. Rajasekhara, another great son of Vidarbha, was probably born at Vatasagulma, (modern Vasim). which he has glorified in his Kavyamimamsa as the pleasure-resort of the god of love. He had his ancestors Akalajalada, Tarala and Surananada has to leave their home country of Vidarbha and to seek patronage at the Court of the Balaramayana, the Balabharata and the Karpuramanjiri, were put on the boards at Kanauj under the patronage of the Gurchara Pratiharas. Later, when the glory of the Pratiharas declined as Sekhara seems to have returned to Tripuri in the train of the victorious conqueror. There his last play Viddhasalabhajika was staged jubilation at the victory of Yuvarajadeva over a confederacy of Southern kings led by Govinda IV in the battle of the Paysoni. Another great poet of Vidarbha who had to go aboard in search of royal patronage is Trivikramabhatt, the author of the Nalacampu, in which he has given us a graphic description of several towns, holy paces and rivers of Vidarbha. He flourished at the court of the Rastrakuta king Indra III and is known to have drafted the two sets of Bagumra plates of that king, dated Saka 816.

In the last quarter of the twelfth century A.D. the Yadavas of Devagiri came into prominence. They had been ruling over Seunadesa in an earlier period as feudatories of the Later Chalyukyas, but Bhillama, the son of
Mallugi, declared his independence and soon made himself master of the whole territory north of the Krishna. He then founded the city of Devagiri, which he made his capital. His son Jaitrapalal killed Rudradeva of the Kakatiya whom he had put into prison. Under Jaitrapala’s son Singhana the power of the family greatly increased. He annexed the Kolhapur kingdom after defeating the Silahara king Bhoja in 1212 A.D. The first inscription of the Yadavas found in Vidarbha belongs to the region of Singhana. It is dated the Saka year 1133 and records the erection of a Torana at Ambadaris of Singhana were won from him by his Senapati Kholesvara who hailed from Vidarbha. He defeated Kamideva, the ruler of Bhambhagiri (modern Bharmer in Khandes), Paramara of Malva, and devastated the capital of the Hoyasalas. He even pressed as far as Varanasi in the north where he put Ramapala to flight. Kholeasavara constructed several temples in Vidarbha and also established Agraharas on the banks of the Payosni and the Varda. The former Agrahara is still extant—under the name of the village Kholapur in the Amravati district. Singhana was succeeded by his grandson Krishna, whose inscription has been found in the temple of Khandesvara on hillock on the outskirts of the village Nandganv in the Amravati district. It is dated in the Saka year 1177 (A.D. 1245-55) and records the donations of some gādyanakas for the offering of flowers at the temple of Khandesvara.

After Karsan’s death, the throne was occupied by his brother Mahadeva superseding the claims of the former’s son Ramchandra. Mahadeva annexed Konkan to his kingdom after defeating Somesvara of the Silahara dynasty. He left the throne to his son Amana, but the latter was soon deposed by Ramachandra, who captured the impregnable fort of Devagiri by means of a coup d’etat. He was the last independent Hindu kings of Devagiri. He won several victories and in a grant of his minister Purusottam, he is said to have driven out the Muhammedans from Varanasi and built a golden temple there, which he dedicated to Visnu. A fragmentry inscription of his
time is built into the front wall of the temple of Laksmana on the hill at Ramtek. In the first half of it, it describes the exploits of Ramchandra’s ancestors from Singhana onwards while in the second half it describes the temples, well and tirthas on and it the vicinity of the hill which it names as Ramagiri.

The object of the inscription seems to have been to record the repairs done to the temple of Laksamana by Raghava, the minister of Ramchandra. Another inscription of Ramchandra’s reign was found at Lanji in the Balaghat district. It is fragmentary and has not yet been deciphered. In A.D. 1204 Ala-ud-din Khilji invaded the kingdom of Ramchandra and suddenly appeared before the gates of Devagiri. Ramchandra was taken unawares and could not hold out long. He has to pay a large ransom to the Muslim conqueror. He continued, however, to rule till A.D. 1310 atiesat.

He was then defeated and slain by Malik Kafur. Some time thereafter Harapaladeva, the son-in-law of Ramchandra, raised an insurrection and drove away the Muhammadans, but his success was short-lived. The Hindu Kingdom of Devagiri thus came to an end in A.D. 1318.

Like their illustrious predecessor, the Yadavas also extended liberal patronage to art and literature. During their age a peculiar style of architecture called Hemadpanti after Hemadri or Hemadpant, a minister of Mahadeva and Ramchandra, came into vogue. Temples built in this style have been found in all the district of Vidarbha. In the Nagpur district they exist at Adasa. Ambhora, Bhuganv, Darsevani, Savner, Ramtek and some other places. Several learned scholars flourished at their court. Among those who hailed from Vidarbha, Hemadri was the foremost. During the reign of Mahadeva he held the head of the Elephant force organised by Ramchandra. He was as brave as he was learned and liberal. He conquered and annexed to the Yadava kingdom the eastern part of vidarbha called Jhadi-mandala. Hemadri is well known as the author of the Chaturavargachintamani comprising five parts (1) Vratakhandha, (2) Danakhanda, (3) Tirthakhanda, (4) Moksakhanda,
and (5) Parisakhandha. Hemadri wrote on other subjects as well. He is the author of a commentary on Saunaka's Pranavalkalpa and also of Sraddhakalpa in which he follows Katyayana. His Ayurvedarasayana, a commentary on Vagbhata's Astangahrdaya, and Kaival-yadipika, a gloss of Bopadeva's Muktaphala are also well known.

Hemadri extended liberal patronage to learned men. Among his proteges the most famous was Bopadeva. He was a native of the village Vedapada (modern Beded) on the bank of the Wardha in the Adilabad district of the former Hyderabad State. Bopadeva is said to have composed ten works on Sanskrit grammar, nine on medicine, one for the determination of the tithes, three on poetics and an equal number for the elucidation of the Bhagavata doctrine. Only eight of these are now extant. The Mugdhabodha, his work on Sanskrit grammar is very popular in Bengal. Marathi literature also flourished in the age of the Yadavas. Chakradhara, who propagated the Mahanubhava cult in that age, used Marathi as the medium of his religious teachings. Following his example, several of his followers composed literary works in Marathi. They are counted among the first works of Marathi literature. Mukundaraja, the author of the vedantic works Vivekasindhu and Paramamrta, and Dnyeshwar the celebrated author of the Bhavaratadhapatika, a commentary on the Bhagavadgita are the most illustrious writers of that age.

The present city of Nagpur in Vidarbha was founded in the early 18th century by Bakht Buland, a Gond prince of kingdom of Deogad in the Chindwara district. The control of Nagpur slowly passed on from Gonds to the Marathas. It then became the capital of the Bhonsles.

With the Bhonsle dynasty came the vast class of cultivators in Vidarbha. Raghujii's success some territories to the Peshwas of Pune and the Nizam of Hyderabad. In 1817, Nagpur city came under British influence. In 1853, Raghujii III died without an heir to his kingdom. As a rest city lapsed into British control under Lord Dalhousie's Doctrine of Lapse.
In the year 1817, the British made Nagpur as the Capital of central provinces. The city lies at the heart of India and joins major routes south to north and east to west. Due to its strategic location this city has developed as commercial and industrial centre, after completion of the Great Indian Peninsula Railway in 1867. The improved transport facility led to development of cotton based textile industries. The area is also richly endowed in mineral products and number of mineral based industries have come up around Nagpur. The region is orange growing area and Nagpur is rightly named as the “Orange City” of India.

In the year 1861, Nagpur became the capital of the Central Provinces. The advent of the Great Indian Peninsula railway (GIP) in 1867 spurred its development as a trade centre. After the independence of India, Nagpur became the capital of Madhya Bharat State (C.P. and Berar). In 1960 Marathi majority Vidarbha region was merged with the new state of Maharashtra and Nagpur designated the second capital of Maharashtra state, alternating with Mumbai (Bombay) as of the Maharashtra state legislature.

2.4 Physiography :

A major part of the region is occupied by plateau and alluvial plain while the rest of the area is mostly rocky, hilly and rugged. The general elevation of the region ranges between 150 and 1050 m. above MSL. The higher landforms mainly occupy the northern and eastern part while the plains elevation less than 300 m occupy the south eastern, central and western part. Satpuras form a chain of ranges in the north and north western borders and mark the highest points with peaks attaining the heights of 1066 m at Gavilgadh and Narnala. The region is mainly dominated by flat-topped tablelands, mesas and buttes with steep and furrowed scarp faces, rocky and stony pediments in the western part. The eastern part is mainly dominated by longitudinal ridges, isolated hillocks, broad alluvial plain and flood plains.
The basaltic hill ranges in the northern part of Amravati and Nagpur districts with an elevation ranging between 600 and 1000 m above MSL comprising foot-hills and steep scarp slopes of Satpuras give rise to many small rivulets. The landform is highly dissected by streams due to high gradients accelerating the run-off.

The western part comprising the basaltic plateau is between 300 and 600 m in elevation above MSL and is characterized by scarp slope and is traversed by subparallel drainage lines. The plateau runs north-west to south east and form a water divide between Tapti and Godavari drainage systems. It exhibits an abrupts fall into Wainganga basin in the east. The tract formed of horizontal sheets of lava with characteristic spheroidal weathering is marked with rounded boulders. In most of the places the plateau surfaces are flanked by mesas and buttes giving a rolling appearance. The eroded pediment occupying the toe slope of scarp faces, ranging in elevation between 300 and 450 m above MSL are strewn with boulders rolled down from scarp faces. Frequent rock exposures with thin alluvial material and sparse vegetation incised by frequent gullies and sheet erosion is common on such landscapes.6

The eastern part covering Bhandara, Chandrapur and Gadchiroli districts marks the transition between trappean and Precambrian land mass which recevies higher rainfall and has dissected rolling topography with rich natural vegetation. Broad valleys between Mahadeo and Ajanta hills, as well as the Tapti basin, an assymetrical valley bounded by Satpuras in the north and Ajanta range in the south, occupy the western part. The area in the east furrowed by the rivers Wardha, Wainganga and Kanhan forms a depositional piedmont plain. It is flat to gently undulating with elevation ranging from 150 to 300 m above MSL.

The monotony of plain is generally broken by few subdued ridges and hillocks standing out as monadnock in the entire flat landscape. The plain in
the eastern part is a structural syncline and is regionally known as Wainganga plain while in the west it is developed mainly by river Purna. It is broad and gently inclined bordered by the plateau in the south and hills in the north. Huge sand deposits in the flood plain due to loss of gradient of local streams have also been observed (Map 2.2).

**Physiographic Regions of Vidarbha:**

Physiographic Regions of Vidarbha is divided into following different regions (Map 2.3).

I. **Purna Basin**
   a) Gawilgarh Hills
   b) The Piedmont Region
   c) Purna Plain Region

II. **Wardha-Wainganga Basin**
   a) **Northern Border Upland**
      1. Arvi Upland
      2. Ramtek Upland
   b) **Wardha-Wainganga Plain**
      1. Nagpur Plain
      2. Upper Wardha Plain
      3. Lower Wardha Plain
      4. Wardha-Wainganga Divide
      5. Upper Wainganga Plain
      6. Lower Wainganga Plain
      7. Pranhita - Godavari - Indravati Loop
      8. The Eastern Hills.

I. **The Purna Basin:**

   Popularly known as Berar, the Purna basin is sandwiched between the Gavilgarh hills in the north and Payanghat in the south. The region is an eastern extension of Tapi valley and Khandesh, though for more fertile. The
VIDARBHA REGION
PHYSIOGRAPHY

Height in Metres

- Less than 150
- 150 - 300
- 300 - 450
- 450 - 600
- 600 - 900
- More than 900

Map No. 2.3
river Purna emerges from Betul plateau, north-east of Amravati and collects a large number of tributaries, both from north and south, most of which run almost perpendicular to the main river. The main tributaries of Purna include Pedhi from the left bank and Pili, Bichan, Span and Chandrabhaga from the right. The eastern extremity of the basin is the low divide (350 m MSL) dominated by Amravati plateau and the Chirodi hills in the vicinity of Amravati, that separate the Godavari system and its tributaries from Tapi-Purna basin. One may class Amravati plateau as a peneplain with the hills in the vicinity standing as inselbergs. The basin has three district units -

a) The Gavilgarh hills or the Melghat Plateau
b) The Piedmont
c) The Purna plain proper

a) **The Gavilgarh Hills or The Melghat Plateau**:

Overlooking the Purna valley and forming the northernmost extension of Maharashtra are the forest clad Gavilgarh hills, also known as Melghat, separated from the plain in the south by an east-west fault. The average altitude of the divide line made by the complex of hills is about 1000m, dipping gently to 500 m in the thalweg of Tapi, and descending steeply to the south-a drop of 500 m in a distance of 6 to 8 km from Chikalda to the foothills. Almost the entire Melghat plateau is drained to the north, except a narrow strip in the south which is drained by a tributary of Purna. Being an extension of Satpudas, the general alignment of the plateau is roughly east-west. The heights on the summit levels linger around 1100 m, with Bairat (1178 m) Chikalda (1103m) Gavilgarh fort (1066 m) and Nangiri (1120 m) all attaining virtually an uniform level, suggesting an ancient surface of erosion.7

b) **The Piedmont**:

Between the hills of Gavilgarh and the Purna plain lies the Piedmont region abuting the scarp face of the Melghat plateau. Besides being a link
between the plain and the hills, the towns in this area also promote trade with Madhya Pradesh and offer marketing facilities for the products of the neighbouring state. The Piedmont region produces more of spices and condiments. Akot, Anjangaon, Achalpur, Paratwada and Chandur Bazar are all piedmont town connected by highways. Achalpur is a historical city and was a capital of the Bahamani and Imandshahi rulers. For long, the capital of the province of Berar famous as a collection and marketing centre of agricultural commodities from and to Madhya Pradesh. Paratwada, at the foot of the hills, is a timber market.

c) The Purna Plain:

The Purna plain proper has the pride of a place in the history and economy of Berar, the name applied to the two districts of Akola and Amravati which occupy the basin. With an extreme climate and a fertile black soil, the region well deserves to be called the 'cotton yard of Maharashtra'. An eastward extension of Tapi trough, appearing like a furrow with a general elevation of about 250 m, the Purna plain proper is extremely fertile and most suitable for the cultivation of cotton. In fact, with more than half the land under cotton in the valley, cotton has become the culture of the region. Jowar, groundnut, pulses and wheat are other crops that are combined with cotton. There are no major irrigation projects except Nalganga project in the western part of the area. Small dams have been built on the rivers joining Tapi from the south.

These include Katepurna and Morna in Amravati district and Nirguna and Gyanganga in Akola district. Despite the fact that much of the cultivation of cotton is still 'Jirayat', Berar grows more than 1/4 of the total cotton produced in the state.\(^6\) Ginning, pressing of cotton is the main industry of the region. While the pressing and baling units, numbering about a hundred are uniformly spread all over the region. The Spining and weaving mills are centred in large towns, two in Akola, one in Badnera and another at Achalpur.
Ready availability of cotton, good transport and accessibility to markets have been factors in the growth of these textile units. Oil mills form the second most important industrial units in the area centred in most of the taluka places and larger villages.

III. Wardha-Wainganga Basin:

Unlike the rest of Maharashtra, Wardha-Wainganga basin, east of 70°E longitude, falls in a very different lithologic province covering a large span of time, ranging from the Lower Pre-cambrian to the Pleistocene. Much of the area is underlain by granite-gneisses or granite rhyolite sequence, exposed all along the Wainganga valley with local variations of basic or ultrabasic rocks and the exposures of Dharwar system in the north. A large enough patch in Penganga valley, called Penganga beds, consisting of quartzites, comparable to Kaladgis, borders the coal beds of lower Gondwana in Umreth and the adjacent series.

On the margin of the trap is exposed the infra-trappaean lameta beds. Nagpur form the easternmost extension of the basaltic plateau, where the trap thins out and forms the capping of the adjacent Burdi hill which has a crystalline base. Besides cultivable lands, minerals and forests form other important economic resources of the region. The development of the basin is not uniform and is confined to more accessible and agriculturally fertile areas. A large part, particularly in Chandrapur and Bhandara districts, is yet inadequately developed. As anywhere else, the forested tribal areas of Chandrapur and Bhandara have attracted the least human effort and the tribal folks live a life of their own, dipped in their beliefs, traditions and the age-long clan organization.

Depending on the physiography, the region can be resolved into a number of sub-regions. (Map 2.3) These are -

a) Northern Border Upland
   1. Arvi Upland
2. Ramtek Upland

b) Wardha-Wainganga Plain
   1. Nagpur Plain
   2. Upper Wardha Plain
   3. Lower Wardha Plain
   4. Wardha-Wainganga Divide
   5. Upper Wainganga Plain
   6. Lower Wainganga Plain
   7. Pranhita - Godavari - Indravati Loop
   8. The Eastern Hills.

a) Northern Border Upland:
   The Northern border of Vidarbha region is sub-divided into two sub-divisions. These are as follows:

1) Arvi Upland:
   Between the source waters of Wardha river on the west and Kanhan on the east, stands the Arvi upland with an average altitude of over 450 m. The plateau is dissected on all sides by the tributaries of Wardha and reduced to 80 km. wide upland traversed only by Nagpur-Amravati road. The railway lines, both the main Central Railway and the one going north to Betul from Nagpur, have avoided this broken land, following a circuitous road. The margins of the plateau carry scrub forests and the top, with its poor soil, has widely spaced villages. Kondhali, Karanja and Talegaon are the important settlements with their weekly markets. Beyond Wardha in the north is the Betul plateau of which the Arvi plateau is an outlier.

2) The Ramtek Upland:
   The Kanhan river passing close to Nagpur separates the Ramtek upland, northeast of Nagpur, from the Arvi plateau in the west. Many of the tributaries of the river Wainganga, Pench and Dawanthari river emerge from the Ramtek hills. With a general height of over 400 m. the area carries a
dense cover of mixed dry deciduous forests which form one of the principal resource of the region. The Nagpur-Jabalpur road passes through the region and is the principal highway that promotes inter-regional contacts. Building of a tank at Ramtek on Sur River, and the development of canal irrigation have made a large stretch of Nagpur plain prosperous. The Ramtek hills are the outliers of Ambagad hills further east; though all are the offshoots of Satpuda ranges. The plateau is known for its scenic beauty and relatively well-preserved forests. Ramtek, lying on the outskirts of the plateau, is an important centre, linked with Nagpur by a railway line. The place has a religious significance and is associated with the legendary king Ram of the great epic Ramayana.

b) Wardha-Wainganga Plain:

This plain is further sub divided into following eight sub-divisions:

1) The Nagpur Plain:

The most important and economically the most developed sub-region of Wardha-Wainganga basin is the Nagpur plain. Formed by the Valley of Kanhan river and its tributaries. The general height of the plain is about 250m, MSL. Nagpur is the apex of the plain beyond which the north Satpura ranges make their appearance in Khamarpani plateau. In the south, it is confined by the Wainganga river and its tributaries and the Umrer hills. Unlike Western Maharashtra, winter crops assume importance in the agricultural landscape of the area. And though jowar retains its importance as the first crop, wheat appears as an important cereals and pulses become uniformly noticeable. Agricultural holdings are large, and at least 2/3 of the total holdings in the Nagpur plain are each over 5 acres, of which about 1/5 are even larger than 15 acres. A special feature of the South Nagpur plain is the cultivation of chillies. Cotton remains an important fibre crop. Orange cultivation in Vidarbha, known all over the country is highly concentrated in Nagpur district. Which alone has more than 17000 acres under orange which is
more than half the total area in Vidarbha. The main harvest ‘Mirg’ is between February & April accounting for 60% of the total production and remaining 40% is produced during ‘Ambya’ i.e. between September & January. The total production of oranges in Nagpur district is estimated at 100,000 metric tonnes.9

2) The Upper Wardha Plain:

This is the plain formed and drained by the river Wardha, a tributary of Wainganga that emerges from the Betul plateau northeast of Nagpur. The sub-region includes much of Warda, Yavatmal and part of Chandrapur district. With an average altitude of about 250m, the area is drained by a large number of tributaries of Wardha, the chief among them being the river Wunna. Close to Chandrapur, about 25 km to the west, Wardha is joined by another of its tributaries, Penganga. Lying between the Umrer hill on the northeast and Yavatmal plateau on the southwest, it is a rich fertile plain, covered with lime rich black soil. Locally the soils are classified as Kali, Morand, Khardi, and Bardi. Khardi and Bardi are the inferior soils. These are shallow occupying the margins of the plain. About 3/4 of the area of the plain is under cultivation, cotton being the most important crop of the region followed by jowar, grown as rabi crop.

3) The Lower Wardha Plain:

While the upper Wardha plain is an agricultural country, the lower part of the Wardha basin has the distinction of having the only coal-belt of the state, and a considerable forest area. Traversing the Warora, Chandrapur and Rajur tahsil of Chandrapur district, the region is rich in minerals and provides the corridor for Wardha-Kazipet-Secunderabad railway line, the transport artery that collects the minerals and forest products of region. With a general altitude of about 170 m. MSL and not a very spectacular relief, the river plain is well utilized for cultivation, but away from the flood plains of the Wardha and its tributaries the land still remains under forests reserved or
protected by the Forest Department. The northern part of the plain occupied by Warora tahsil has over half the area. Under cultivation, but the per cent-age of net sown area progressively decreases further south and east. Chandrapur talukas has only 1/3 of the land under cultivation, and in Sironcha, extreme south of the Chandrapur loop, even less that 1/4 of the area is under crops. Agriculture and forest are complementary and low acreage under cultivation is invariably accompanied by a high per centage of land under forest.

4) Wardha-Wainganga Divide:

The Wardha-Wainganga doab traversed by a number of parallel and sub-parallel tributaries, like Jodam, Bokardoh, Gondani, Human and Kalhar in the north joining each other to form Pathri, Mul, Andheri and Erai in the south, as if the entire area is furrowed north-south, is largely wooded except for a few kilometers on either side of the rivers. The principal transport route, Nagpur-Chandrapur railway line and the road follow the Mul valley and the entire area particularly the northern part is studded with tanks. The practices of tank irrigation on a large scale suggests the low configuration of the divide indicating that the region is a virtual peneplain. North of Chandrapur-Mul-Gadchiroli road, the land drained by Jodam, Bokardoh, Human and Mul river is described as the lake district of a region, with an altitude ranging from just over 200 m. around Nagbhir to 180 m. around Mul, in a distance of about 100 km, the gently sloping land practices flow irrigation on a large scale from the tanks built across small rivulets and sometimes even a large stream, as in the case of Asola Medha tank built across Jodam river.

Despite the practice of irrigation on a large scale, the forest cover is still predominant. A thin soil cover, a dissected land or a hilly terrain have been left untouched. In fact, the colonization of this area itself appears to have started late and in the process farming has not made as much of a dent in the forest in this part as in many other areas of the State. Adequate irriga-
tion facilities have made the Wainganga valley and the Wardha-Wainganga doab the rice bowl of Chandrapur district. The two tahsil, Brahmpuri in the Wardha-Wainganga doab and Gadhchiroli east of Wanganga, together produce sixty per cent of the rice of the Chandrapur and Gadchiroli districts. Tank irrigation so typical of the area suggests not only a keen terrain perception of the tribal communities but also the skill they used in building these tanks most of which were built by a caste called ‘Kohlis’. The encouragement for building irrigation tanks came from the Gond kings who allowed the rent-free tenure of the land irrigated by a tank for a specific period.

This system was known as ‘Tukum.’ The tanks built hundreds of years earlier are still widely in use though many of them have been silted and are in a state of disrepair and no longer in use, particularly in Sironcha tahsil, in the south of the Gadchiroli district.

5) Upper Waingang Plain:

The river Wainganga, emerging from Chhindawara plateau in Madhya Pradesh follows a north-south course in Maharashtra. Making some meanders and bulges, the river traverses the districts of Bhandara and Chandrapur, before it is joined by Wardha from the west, to be called Pranhita in its lower course, where it forms the boundary between Maharashtra and Andhra Pradesh. Throughout its entire length in Vidarbha the river follows in a granite gneissic terrain, in a very ancient topography and encounters in its course the metamorphic Dharwars in Bhandara district which form the principal iron bearing rocks of the area. Flowing at an average altitude of less than 200 m. with an imperceptible slopes in its longitudinal profile, the river makes a kilometer wide sandy bed with the stream appearing as a trickle during the dry months. It is joined by Kanhan on its right bank on the eastern extremity of Nagpur district, and Kabragarhi from left near Awalgaon in Chandrapur district. Besides these two, there are a large number of tributaries running transverse to Wainganga which forms a dendratic system.
6) The Lower Wainganga Plain:
This is the plain associated with Wainganga, south of Brahmagiri till its confluence with Wardha, having an average altitude of 200-250m. MSL rising gently on either side of the river's flood plain and interspersed with in selbergs in the peripheral zone which appears a veritable peneplain. The saucer-shaped basin is bordered on the east by Gadchiroli hills and Surajgarh hills. The eastern half of the plain is poorly developed and occupied by a large number of zamindari estates granted to individuals during the British period.

7) The Pranhita-Godavari-Indravati Loop:
Enclosed between Pranhita (name given to Wainganga after its confluence with Wardha), on the west, a short stretch of Godavari on the south, and Indravati on the east, is the forest covered upland, consisting of Ahiri hills, Dewalmari hills and Sirikonda (highest point-527m) from north to south. Much of this area is included in Sironcha tahsil of Gadchiroli district. This southernmost part of the state, bordered by Adilabad and Karimnagar district of Andhra Pradesh in the south and Bastar district of Chhattisgarh in the east, is located in the farflung corner of the state. Much of this area is under forest inhabited by the tribal community of Gonds living in small village and huts.

8) The Eastern Hills:
The eastern most extremity of Vidarbha consists of a series of hills, about 400m MSL, that form the divide between the Godavari and Mahanadi water systems. From north to south, Nawegaon hills, Gadchiroli hills, Surajgarh hills and Ahiri hills appears well aligned. The divide between the head waters of Seonath, a tributary of Mahanadi and those of the tributaries of Wainganga is considerably lowered and the water parting is not so sharp, a mere swell punctuated by inselbergs which sometimes rise to more that 500 m MSL. The area is densely wooded and except were the inter-state
routes traverse, the administrative boundaries are not so well defined. In the southern part, a number of rivers moving due south from the plateau join Indravati river.

2.5 Geology & Minerals:

The region forms a part of the peninsular India and present varied rock formations from the oldest Pre-cambrian to recent Alluvium. The formations exposed in order of antiquity are older Pre-cambrian, Cuddapah and Vindhyans, the Gondwana, Lameta Group, Deccan Trap and recent deposits. The granite, hornblende and biotite gneiss with basic intrusive form the oldest rocks. Over these ancient rocks lie a few basins of later sediments covered by extensive sheets of lava flows comprising the Deccan Trap formation. The Cuddapah system includes crystalline limestone occupying a small area in the southern part of the Sironcha tahsil of Gadchiroli district while the limestone, dolomite lime-stone, purple shale and sandstone of Vindhyan system occupies a vast area in the district of Yavatmal and Chandrapur. Subsequent movements in the crust have given rise to faults, in which sediments of Gondwana age comprising sandstone and shale have been deposited giving rise to the important coal fields of the Pench-Kanhan valley and the Wardha valley. Sporadic outcrop of Lameta beds are exposed in Chandrapur, Nagpur and Yavatmal districts while the alluvium is restricted to the basins of the rivers Wainganga, Wardha, Pranhita, Penganga and Purna.10

The State of Maharashtra has large areas covered by Deccan Trap lava-formation with which no economic mineral deposit is associated except bauxite, laterite and small occurrences of minerals like limestone, intertrappean clays, gypsum, agates, jaspar etc. Out of the state’s total area of 307713 sq.km. potentially rich mineral area is hardly 37828 sq.km. Which is about 12.30 per cent of the entire area of the state. Out of the mineral bearing areas, about 60 per cent area falls in Nagpur Division, 20 per cent in
VIDARBHA REGION
GEOLOGY AND MINERALS

Geology
1. Alluvium - Recent
2. Deccan trap with intra trappeon bed - Cretaceous - Eocene
3. Lameta bed - Upper Cretaceous
4. Upper Gondwana - Upper triassic - Middle Jurassic
5. Lower Gondwana - Upper carboniferous - Permian
6. Vindhyan system - Upper carboniferous - Lower Palasozioic
7. Pengango beds, pokhali and koladgi series - upper pre-cambrian
8. Granite
9. Granite gneisses
10. Dharwar system - Lower pre-cambrian
11. Basic and ultra basic rocks

MINERAL

- □ Chromite
- △ Clay
- ■ Coal
- ○ Copper Ore
- ● Iron Ore
- ▣ Mangenese Ore

Map No. 2.4
Konkan Division, 10 per cent in Amravati Division, 5 per cent in Aurangabad Division, 3 per cent in Pune and 2 per cent in Nashik Division. Hence near about 70% mineral bearing areas falls in Vidarbha Region. Mineral point of view Vidarbha is rich region in Maharashtra. The important mineral bearing areas of the state are almost confined to the districts of Vidarbha region, i.e. Nagpur, Bhandhara, Chandrapur and Gadchiroli of Nagpur Division and Yavatmal district of Amravati division.11

The region is well known for manganese ore. Manganese and Chromite are associated with Pre-cambrian rock in Bhandara and Nagpur districts. Chandrapur is rich in iron ore deposits, which occur closely in association with the Dharvarian rock formations of Archaean age. Apart from this, very large deposits of limestone both flux and cement grade occur in the Chandrapur and Yavatmal districts. Important coalfields of the Pench-Kanhan valley, Wardha valley are located in the region. Deposits of Sillimanite, Kyanite are located in Bhandara district, which are useful in the manufacture of high-grade refractories, (Map 2.4).

2.6 Drainage Pattern:

Two main rivers of the Akola district are the Purna and the Penganga. The Purna rises in the south facing scarps of Gavitgarh hills in Amravati district. It has a length of about 100 km. in the district and flows westward across the most of the district. The immediate banks of the river are badly broken and dissected. The right bank is at a higher level than the left bank which seems to be the main reason for a large number of rural settlements on its northern bank. Ketepurna, Shalanpur, Morna, Mun, Naud, Man and Uma are important tributaries of the Purna.

The Penganga river rises in Buldhana district close to the northern scarp edge of Buldhana plateau in the Deulghat hills. It enters the Akola district in the south-west and flows in a general south easternly district. In its entire course through the Akola district the river is non-perennial. The river
has only a seasonal flow, being dry during the hot weather. The Katepurna, or the lower Purna or the south Purna as it is differently called also rises in Ajanta ranges, but out side the Buldhana district. It has a run-off about 50 km. in the southern part of Buldhana district before it leaves the Buldhana district and entered into Jalna district. Both the Penganga and the Katepurna are important left bank tributaries of the Godavari but they do not gain any importance till after they leave Buldhana district. Dhamna is a tributary of Katepurna while Koradi is a tributary of Penganga. The Purna river which rises in Galvilgarh hills in Amravati district flows west-wards across the northern part of the Buldhana district and joins the Tapi in Jalgaon district. It is the only perennial stream in the Payanghat plains. A large number of streams join it on both its left and right banks. Banganga, Mun, Gyanganga, Vishwaganga and Nalganga are the important tributaries.\textsuperscript{12}

The main river in Amravati district is Purna. It flows, in a general, southerly and south-easternly direction till it turns west-wards and forms a part of the district boundary between Amravati and Akola. Pedhi, Arna, Chandrabhaga and Shahanur are important tributaries of the Purna in the Amravati district. The Wardha river rises to the east of Multai in Madhya Pradesh forms the eastern boundary of Amravati district and receives a number of short tributaries on its right bank. Maru, Pak, Nala, Narna and Chargar are the most important tributaries that join river within Amravati district. The Tapi flows along the north-west boundary of the district. Khurdi, Khardu, Sipna, Gargam, Dewal and Dhulghat are important tributaries of Tapi river in Amravati district.

The chief rivers of Yavatmal district are the Wardha and Penganga which flows along the north-eastern and southern boundaries of the Yavatmal district respectively. The Wardha river flows, in general, south-easternly direction along the north-eastern boundary of the Yavatmal district. The Wardha is the only river of the district which is partly navigable. The bed of the river
is broad and deep, but banks are sometimes overflowed in times of exceptional floods. During the monsoons the river flows with a strong current but in summer the river is fordable at a number of places. The Bembla and the Nirguda are the main tributaries of the Wardha river within Yavatmal district. These both tributaries of Wardha river are perennial. The Bembla rises in Amravati district and only the last 30 kilometers or so drain Yavatmal district. The Nirguda river rises within the Yavatmal district itself and has a length of about 165 kms. The Penganga river forms the southern district boundary of Yavatmal district throughout its long sinuous course. The river changes twice from one longitudinal valley to a parallel longitudinal northwards by making 'S' shaped curves. The Pus, Arha, Aran, Waghavi and Kung are the major tributaries of the Penganga river in Yavatmal district.

The main rivers of the Wardha district are Wardha and its tributaries i.e. Wunna, Dham, Asoda and Bor. The Wunna the principal tributary of Wardha river enters the district from Nagpur and traverses the centre of Hinganghat tahsil of Wardha district and joins Wardha river near Sawangi at the south-western corner of the Wardha district. The Bor and the Dham rise in Arvi tahsil, flowing in a south-easterly direction unite near the village Sawangi in Hinganghat and immediately afterwards join the Wunna a little above Mandgaon of Samudrapur tahsil. The Asoda, another tributary of the Wardha, rises in the south-west of Arvi tahsil and flowing through Deoli tahsil and afterwards join the Wardha river. Most of these rivers are seasonal and the beds of these rivers are very deep rendering unfit for canal irrigation.

The Nagpur district is drained by three drainage systems. The North-east and east-central portion is drained by the Wainganga river and its tributaries, the central and southern portion is drained by the Wunna river which itself is a tributary of the Wardha river. The North-Western part of the district is drained by the Wardha and its tributaries the Jam and Kar.

The entire district of Bhandara is drained by Wainganga river and its
VIDARBHA REGION
DRAINAGE PATTERN

Map No. 2.5
tributaries. The Wainganga river rises in the Chhindwara and Seoni plateau of Madhya Pradesh and enter Bhandara district in the north. Initially it flows west along the northern boundary of the district and then turns south-west and gradually south. Before leaving the district it flows south east. The Wainganga drains mainly the western part of the district and has an overall length of about 200 km. within the district. The Ambagad, the Bodalkasa, the Kanhan and the Chulband are some important tributaries of Wainganga river.

Wardha river is the biggest and main river in the Chandrapur district. Erai, Andhari, Wainganga and Painganga rivers are also flowing twelve months. The whole of the western border is bounded partly by Wardha and Godavari rivers. After the confluence of Wardha river with Wainganga the combined stream is known as Pranhita. Wainganga enters the district near the north eastern corner and forms a natural boundary at the eastern side of the Chandrapur district.

The Gadchiroli district lies in the Godavari basin. Pranhita, Wainganga and Indrawati are the three main tributaries of Godavari, respectively drain western, central and eastern region of the Gadchiroli district. The entire western border is bounded partly by the Wainganga and Pranhita and southern border is bounded by Godavari river. The Pranhita joins the Godavari near Sironcha, (Map 2.5).

2.7 Ground Water:

The varied geology of the region show equally varying geo-hydrological conditions. The ground water, therefore, exists under both waterable and confined conditions. The prominent aquifers of the region are alluvium, weathered section of schists, gneisses and granite and highly jointed or sheeted zones in the traps. The vesicular layer also attributes to the flows of ground-water wherever the vesicles are well linked to the permeable layer. The permeability in the Deccan trap varies widely and as such groundwater condi-
tions are most erratic. The movement and percolation of groundwater depends on intensity and depth of joints, thickness of weathered zones and location of vesicular trap. The ground water position on the plateau south of Buldhana ghat irregular and also difficult to exploit.

2.8 Climate:

The climate undoubtedly holds the key to regional diversity. Critical analysis of diverse environmental effects makes its clear that, climate is the most fundamental far-reaching of the natural elements that control human life. Its influences are so varied, so subtle and all pervading as to defy complete identification and analysis. People’s interest in the atmosphere is as old as the history of mankind. The clothes we wear, the houses we build for our shelter, the food we eat, the occupation we follow, migration from one part of the earth to the other, and even the very mode of living-every aspect of human life is more or less controlled by the climatic conditions in which we live. If the varied and intricate human responses to the environment are taken into consideration, we are bound to believe in the principle of ‘environmental determinism’ according to which the entire form and culture of a group can be explained in terms of geographical influences. In a large measure climate determines where man may live and thrive? what crop he may raise? what type of home he may appropriately build? What sort of clothing he may wear? and what pests and diseases he must combat? The potential crop producing capability of a given area is dependent mainly of the existing climatic and soil conditions. Since climatic factors exert mainly regional influence on plantlife, the differences in the behaviour of a crop or a group of crops over extensive area, as in a given state or in a group of states, may be considered primarily due to differences in climatic conditions rather than soil conditions. It is obvious that climate dictates the range of crops which a country can economically produce. This in turn sets range of commodities which that country must import if it wishes its people to live a
full life in the modern sense. The success or failure of cropping season is determined by the intensity of climatic factors. The three most important factors of climate from the stand point of plant response are temperature, water supply and light and they may be treated as primary determinants of crop growth.

Climate plays an important role in affecting the characteristics of agricultural economy in a region. It can influence the choice of farming system either indirectly through its impact on soil formation or directly through. Such as, the length of growing season, the occurrence of frost and availability of water for crop-growth.

The climate of the Vidarbha is tropical monsoon type. The annual rainfall varies from 750 to 1450 mm. distributed over 60 to 70 days. From middle of June to ends of August is the period of heavy rainfall. In September rains are occasional. Few showers associated with cyclonic storms are also received during January and February.

**Table No. 2.2 : Mean Annual Rainfall and Co-efficient of Rainfall Variability in Vidarbha Region (1970-2000)**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the District</th>
<th>Mean Annual Rainfall in mm.</th>
<th>Co-efficient of Rainfall Variability in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Buldhana</td>
<td>792</td>
<td>26.84</td>
</tr>
<tr>
<td>2.</td>
<td>Akola</td>
<td>859</td>
<td>25.93</td>
</tr>
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<td>3.</td>
<td>Amravati</td>
<td>936</td>
<td>26.44</td>
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<td>4.</td>
<td>Yavatmal</td>
<td>978</td>
<td>28.88</td>
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<td>5.</td>
<td>Wardha</td>
<td>1062</td>
<td>22.86</td>
</tr>
<tr>
<td>6.</td>
<td>Nagpur</td>
<td>1015</td>
<td>22.86</td>
</tr>
<tr>
<td>7.</td>
<td>Bhandara</td>
<td>1309</td>
<td>20.00</td>
</tr>
<tr>
<td>8.</td>
<td>Chandrapur</td>
<td>1216</td>
<td>29.96</td>
</tr>
<tr>
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<td>Gadchiroli</td>
<td>1427</td>
<td>28.19</td>
</tr>
<tr>
<td>10.</td>
<td>Vidarbha Region</td>
<td>1066</td>
<td>25.77</td>
</tr>
</tbody>
</table>

*Source: Computed by the Author.*

Lower rainfall zone with rainfall between 750 and 900 mm. located in the western and southwestern parts constitutes the semi-arid part, while the central part with rainfall between 1000 and 1200 mm. is dry sub humid. The
VIDARBHA REGION
MEAN ANNUAL RAINFALL

1970-2000

Index

- Above 1100 mm
- 1000 mm - 1100 mm
- 900 mm - 1000 mm
- Below 900 mm

Map No. 2.6
VIDARBHA REGION
CO-EFFICIENT OF RAINFALL VARIABILITY

1970-2000

\[ A \]

Index

- Above 28%
- 24% to 28%
- Below 24%

Map No. 2.7
eastern, south eastern and the northern tip of Amravati district with high rainfall between 1200 and 1450 mm. forms the sub humid to humid part.

Table 2.2 indicates that below 900 mm. mean annual rainfall area was found in Buldhana and Akola district whereas 900mm. to 1000 mm. mean annual rainfall region was observed in Amravati and Yavatmal districts during the period of investigation. About 1000 to 1100 mm. mean annual rainfall was found in Wardha and Nagpur districts and above 1100 mm. mean annual rainfall was recorded in Chandrapur, Bhandara and Gadchiroli district from 1970-75 to 1995-2000 (Map 2.6).

Variability of rainfall varies from district to district. Below 24% rainfall variability was recorded in Bhandara, Nagpur and Wardha districts whereas 24% to 28% rainfall variability was noticed in Buldhana, Akola and Amravati districts during the period of investigation. While above 28% rainfall variability was registered in Yavatmal, Chandrapur and Gadchiroli districts during the period under study (map 2.7).

The mean annual air temperature varies from 25° to 27°C. High temperatures of 45°C or more are witnessed during May while low temperatures of 8° to 10°C are recorded in the months of December and January.

2.9 Soils:

Landuse for the crop husbandry is the function of soil-water plant relationship. Similar soils of same great group occurring in different geomorphic units influenced by different soil forming processes and environmental factors have different landuse potentials. Moreover the crop adaptability, acceptability and management are different in different part of the region.

The hill ranges and mesas and buttes are distributed in the districts of Amravati, Nagpur and Chandrapur in rainfall zone of 900-1300 mm. The soils are severely eroded, shallow ustorthents on slopes ranging between 10 and 25 per cent. Soils have uneven depth and are underlain by stony substratas. They are intersected by gullies and have rapid run-off resulting
in severe erosion and are prone to droughtiness. They are mostly under tropical moist deciduous forests in high rainfall zone and tropical dry deciduous forests in low rainfall zone.

The moderately sloping (5% - 10%) residual hills occur in the districts of Yavatmal, Chandrapur and Bhandara in the rainfall zone of 900-1350 mm. Soils are moderately deep-to-deep, reddish brown; fine loamy Plinthustalts and Ustochrepts with frequent stony and gravelly phases. The intake rate is moderate (2-5 cm/hr) and the available moisture capacity is low. Soils are prone to droughtiness. They are used for rough grazing and dry deciduous forests.

The gently sloping (3%-5%) plateaus are distributed in the districts of Buldhana, Akola, Yavatmal, Amravati and Nagpur in the rainfall zone of 750-1100mm. The soils on plateau are moderately deep-to-deep, brown to dark grayish brown fine loamy to fine Ustochrepts and reddish brown to pale brown, very shallow to shallow, coarse loamy to fine loamy. The Ustorthents with gravelly substrata and poor moisture retentive capacity are not suited for crop husbandry. These soils are under tropical dry deciduous forests and rough grazing land and are cultivated at places for jowar, cotton and pulses.

The moderately deep and deep Ustochrepts are used for the cultivation of cotton, jowar, groundnut and pulses. At some places they are underdry mixed deciduous forests. Strongly sloping to moderately steep (10%-25%) scarp faces of the plateau are severely eroded exposing the rocky substrata at frequent intervals.

The pediment surfaces occurring in the semiarid parts of Amravati, Akola, Buldhana, Nagpur, Yavatmal district are covered with soils of variable depth i.e. shallow in upper positions followed by moderately deep, brown to gray brown, fine loamy to fine soils with shallow to moderately deep rooting depth, slow intake rate (0.13 to 0.5 cm/hr), low moisture holding capacity and prone to frequent droughtiness. They support scattered dry deciduous forests with patches under cultivation of jowar, pulses and bajara.
Gently sloping (3%-5%) dissected rolling land occurs in the high rainfall zones of Chandrapur and Bhandara. They are covered with moderately deep-to-deep, eroded, reddish brown acidic to neutral Plintustalfs, Haplustalfs and Ustochrepts with gravel increasing with depth and have medium available moisture capacity, moderate intake rate (2-5 cm/hr), low nutrient availability and are prone to frequent droughtiness. The soils are mainly under dry and moist deciduous forests with patches under cultivation of paddy and millets.

Very gently sloping piedmont alluvial plains occur in the district of Buldhana, Akola, Wardha, Chandrapur, Bhandara and Nagpur in the low and high rainfall zones ranging from less than 800 to 1350 mm and at certain places ranging to 1450 mm with high water surplus. The soils are deep to very deep brown to gray brown, fine loamy to fine montmorillonitic, ustochrepts and Chromusterts respectively. Chromusters have high shrink-swell potentials with more water retentive capacity. These soils have severe limitation for crop choice due to unfavourable conditions for root growth because of the compactness of the sub soils. In the low rainfall zone, the soils are under cultivation for cotton, jowar, pulses, wheat and groundnut with localized patches of tropical dry deciduous forests and rough grazing land. In the high rainfall zone the soils are mainly under dry and moist deciduous forests including cultivated patches raising paddy, millets and pulses (Map 2.8)

Level to very gently sloping (upto 3%) flood plains are distributed over the districts of Akola, Buldhana, Yavatmal, Bhandara, Chandrapur and Nagpur in the rainfall zones ranging from less than 800 to 1350 mm. The soils in this part are deep to very deep, grayish brown to very dark grayish brown, fine loamy to fine calcareous Ustochrept and Chromustert. They have slow intake rate (0.13 to 0.5 cm/hr), high ground water table with some what high level of salinity at places and severe problem of drainage. Soils occurring in
## VIDARBHA REGION

### SOILS

#### GREAT GROUP ASSOCIATION

<table>
<thead>
<tr>
<th>Mapping Symbols</th>
<th>Great group - Association</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ustorthent - Eroded mis. land type</td>
<td>Hill ranges</td>
</tr>
<tr>
<td>2.</td>
<td>Ustorthent - Severely eroded stony and Rockyphase</td>
<td>Mesa-Butte</td>
</tr>
<tr>
<td>3.</td>
<td>Plinthustalf - Ustochrept</td>
<td>Residual hill</td>
</tr>
<tr>
<td>4.</td>
<td>Ustorthent - Ustochrept</td>
<td>Upper plateau</td>
</tr>
<tr>
<td>5.</td>
<td>Ustochrept - Ustorthent</td>
<td>Lower Plateau</td>
</tr>
<tr>
<td>6.</td>
<td>Ustorthent - Ustochrept</td>
<td>Pediment</td>
</tr>
<tr>
<td>7.</td>
<td>Plinthustalf - Haplustelt - Ustochrept</td>
<td>Dissected rolling land</td>
</tr>
<tr>
<td>8.</td>
<td>Ustochrept - Chromustert</td>
<td>Piedmont alluvial plain</td>
</tr>
<tr>
<td>9.</td>
<td>Chromustert - Ustochrept</td>
<td>Flood plain</td>
</tr>
</tbody>
</table>

Map No. 2.8
the low rainfall zone are presently used for the cultivation of cotton, jowar, wheat, groundnut, gram and linseed. In the high rainfall zone, they are normally under paddy, linseed, sesamum, gram and wheat cultivation.\textsuperscript{18}

The soils of Vidarbha region can be classified into following broad categories (Map 2.9).

1. Coarse shallow soils (high level)
2. Medium black soils (plains)
3. Deep black soils (Valleys)
4. Clay loam of shallow black colour
5. Laterite and lateritic soil
6. Redish and yellowish brown soils of hill slopes (mixed origin)

1. **Coarse Shallow Soils**:

Such soil occupy the major divides, with the exception to Western Ghats. The Ajanta plateau, the Balaghat plateau and Mahadeo range carry such soils. This type of soil is found in Melghat region of Amravati district, north western part of Yavatmal district, northern central part of Wardha district, northern part of Chandrapur district, southwest part of Bhandhara district. Because of the paucity of rainfall, weathering in these areas is retarded and so is leaching, with the result that coarse shallow soils with very little humus occur on these plateaus. Occupying the divides, these areas have not received any transpired soil. The thickness of such soils is restricted by the depth of weathering, which does not exceed 40 cm. In the western part of these plateaus, where the rainfall is slightly higher, the thickness is greater and close to water course it reaches a depth of even a metre. These soils occupy a zone having 600 to 750mm of rains, and are neutral or alkaline in reaction. The moisture storage in these soils is limited because of their shallow profile and a coarse texture which does not permit much capillary water. The free water is easily drained or evaporated. These support only rainfed
crops like bajara, nachni and warai.

2. **Medium Black Soil**:

   The medium black soils occupy the eastern margins of the plateau divides which are either lowered or replaced by erosional plains, either as a result of the recession of the plateau margins or because of dissection by the tributaries of some major rivers. The medium black soils, occupying the major area of Vidarbha region, grade into deep black soils, and differ from the latter in their depth of the profiles, colour and texture. This type of soil is mainly found in Amravati, Akola district, southern part of Nagpur district and western part of Chandrapur district.

3. **The Deep Black Soils**:

   Popularly known as black cotton soil, these occur in areas of moderate rainfall. Usually, these soils occupy the valleys, terraces, flood plains and lower parts of almost all basins in Vidarbha region. Being enriched heavily by the sediments brought from the slopes by wash, creep and innumerable small water courses. Their colour is much darker than the medium black soil, and thickness of the profile much deeper. These soils also have a larger fraction of clay. Devoid of any leaching, since they occur in areas of moderate and low rainfall, and poor or no chemical weathering, the soils have not suffered from any loss of bases or concentration of iron or aluminium in their upper horizons. Thus, they have an alkaline reaction and are known for their high content of lime (1% to 5%) and other bases. The lime takes different forms, it may occur as nodules in the profile or as a band. Despite their dark colour, the deep black soils are poor in organic content and even in nitrogen but do not show any deficiency in potash and phosphates. The pH of these soils is between 8 and 8.5 containing 0.2 to 0.03 per cent of soluble salts. This type of soil is found along with almost all the banks of the rivers in Vidarbha region.
4. Clay Loam:

This type of soil is found in south and south east part of Bhandara district. This area recives annual average rainfall more than 1300mm. of rains. The soils are clayey. In Bhandara district this soil is known as 'Kali', the black. It is the soil of paddy fields. These soils are similar to the medium black soils, but being in more rainy parts, they make good paddy fields.

5. Lateritic Soils:

There is voluminous literature on the occurrence and properties of laterites and lateritic soils. Vidarbha region presents some of the best examples of laterite and lateritic soils. Laterites are the products of chemical weathering with excessive leaching of bases and a surface concentration of iron, aluminium and even silica. This happens in tropical climate with a rainfall of over 1400 mm. and a well defined dry season. The eastern part of Gadchiroli district offer excellent sites for lateritization. Presence of iron in the parent rock is a prerequisite for the development of laterites, and this is satisfied by basalt only too well.

The particles of disintegrated laterite and the highly leached red soils, together give rise to what is known as lateritic soils, a soil that tendency to develop a crust after the rainy season. The processes of surface concentration of iron oxides are manyfold and still debated. The soil is highly acidic showing a pH value, of 5 to 6, devoid of all bases, but rich in nitrogen. The soils support forests and inferior varieties of millets. These are the least productive soils of the Vadharbha region. Since these occur in heavy rainfall areas with very rugged terrain, they have not attracted cultivation and are either desolate plateaus or carry jungle type vegetation in the region.

6. Reddish, Yellowish and Brownish Soils:

Such soils occur in the eastern part of Chandrapur and Bhandara districts. These have partly the properties of the lateritic soils. Excessive leaching resulting in the loss of alkali cations and the concentration of sesquioxides
are the basic features of the pedogenesis of these coloured soils. The soils retain their colour even after being transported, since the process of leaching continues as long as they exist in areas with over 1300 mm rain. Being not very productive, these were the unfavoured soils of the early settlers permitting the growth of forests. In the forests of Chandrapur, eastern part of Vidarbha the reddish brown soils is the rule. The divides, reaching a stage of near planation are occupied by forests. The extensive teak stands of eastern Vidarbha region thrive on this inferior variety of soils which is neither fertile nor retentive of much moisture. These soils usually occupy undulating grounds. This has to be noted that the schistose rocks of Wardha-Wainganga valley is rich in iron, comparable to Deccan basalts, which constitute the Western Ghats in Maharashtra. This explains the soils colour in Chandrapur and Bhandara districts.

7. The Brown Gray Soils:

The outer flood plains of Wardha-Wainganga carry a brown gray soil which owes its characteristics to a parentage that is dominated by granite-gneiss rocks of Pre-Cambrian. Unlike the soils having reddish colour in the high rainfall area and black colour in the low rainfall area of the plateau, the soils here are neither red nor black but have a gray appearance. Absence of iron and a moderate rainfall have produced this kind of soils. The outer plains of the basin area not subjected to annual inundation, and thus year after year enrichment of these soils does not take place. these are not as fertile as the black soils, containing a high per centage of calcium carbonate and other soluble salts, deficient in iron and potash and characterized by a low per centage of clay.¹⁹

2.10 Natural Vegetation:

About 28 per cent of the total area is covered by forests. Despite high rainfall and suitable edaphic conditions, many parts in the region do not support forest due to human interference, rugged terrain and other con-
straits. However, Gadchiroli the eastern parts covering Chandrapur and Bhandara, the northern parts of Amravati and Nagpur and parts of Yavatmal district support good forest cover due to enough supply of moisture and account for more than 90 per cent of the forest area in Vidarbha.

According to ecological conditions and forest types the area may be classified (Forest Atlas of India, 1976) as follows:

i) Tropical moist deciduous forest receiving more than 1200mm. precipitation includes Chandrapur and Bhandara growing mainly teak, haldu, dhavada and mixed species.

ii) Tropical moist deciduous to tropical dry deciduous forests with generally teak bearing forests are found in Yavatmal, Nagpur and other adjoining areas growing teak, dhavada, salavi and haldu.

iii) Tropical dry deciduous forests grading to biotic type (degraded stages) in the remaining drier parts having mainly teak, dhavda, salai, hivar, babhul, etc. (Map 2.10).

During 1995-2000 below 10% geographical area was observed under forest in Akola district while 10% to 20% geographical area was recorded under forest in Wardha, Buldhana, Yavatmal and Nagpur districts. About 20% to 30% geographical area was experienced under forest in Amravati and Bhandara districts whereas above 30% geographical area was registered under forest in Chandrapur (35.75%) and Gadchiroli (74.44%) districts during 1995-2000 (Map 2.11A).

Map 2.11 B. indicates that below 1% negative change in forest area was took place in Buldhana, Akola, Gadchiroli and Wardha districts and above 1% negative change in forest area was recorded in Amravati districts between 1970-75 and 1995-2000. Below 1% positive change in forest area was observed in Yavatmal and Nagpur districts while above 1% positive change in forest area was observed in Bhandara and Chandrapur districts. Variability of rainfall and population pressure on agricultural level are the
responsible factors for positive and negative change in forest area from 1970-75 to 1995-2000.

**Table No. 2.3 : Districtwise Change in Forest Area in Vidarbha Region.**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Area Under Forest</td>
<td>% to the Total Geographical Area</td>
<td>Area Under Forest</td>
</tr>
<tr>
<td>1.</td>
<td>Buldhana</td>
<td>1181</td>
<td>12.21</td>
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<td>2.</td>
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<td>7.11</td>
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<td>Amravati</td>
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<td>28.71</td>
<td>3233</td>
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<td>4.</td>
<td>Yavatmal</td>
<td>2544</td>
<td>18.82</td>
<td>2599</td>
</tr>
<tr>
<td>5.</td>
<td>Wardha</td>
<td>670</td>
<td>10.05</td>
<td>658</td>
</tr>
<tr>
<td>6.</td>
<td>Nagpur</td>
<td>1831</td>
<td>18.56</td>
<td>1898</td>
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<tr>
<td>7.</td>
<td>Bhandara</td>
<td>2519</td>
<td>27.15</td>
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<td>8.</td>
<td>Chandrapur</td>
<td>3331</td>
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<td>3903</td>
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<tr>
<td>9.</td>
<td>Gadchiroli</td>
<td>11109</td>
<td>74.48</td>
<td>11104</td>
</tr>
<tr>
<td>10.</td>
<td>Vidarbha Region</td>
<td>27474</td>
<td>28.26</td>
<td>27875</td>
</tr>
</tbody>
</table>

*Source: Computed by the Author.*

**2.11 Summary:**

i) The Nagpur & Amravati division collectively known as Vidarbha region. This region was formerly a part of Central Province & Berar since from 1 May 1960 onward Vidarbha region is the integral part of Maharashtra. The region includes 11 districts namely Buldhana, Akola, Amravati, Yavatmal, Wardha, Nagpur, Bhandara, Chandrapur and Gadchiroli. Recently two new districts namely Gondia & Washim has been created with the bifurcation of Bhandara & Akola district respectively. Toda total number of districts in Vidarbha region is eleven. But because of non availability of time series data for recently created districts, the present research work has been restricted to nine districts only.

ii) The total geographical area of Vidarbha region is 97404 sq.km. which is 31.66% of total geographical area of Maharashtra state. Vidarbha region occupied largest geographical area in the Maharashtra state. Vidarbha region posses 119 tahsil places, 105 towns and 15877 villages.
iii) Historical background of Vidarbha region shows that this region ruled by various dynasties. The royal family of Bhoja was ruling over Vidarbha in ancient time. Vidarbha region was a part of Ashoka dynasty. In the due course of time this region ruled by Satavahanas, Chalukyas, Yadavas, Ala-ud-din Khilji, Malik Kafur, Bhonsle and British.

iv) The major part of the region is occupied by plateau and alluvial plain. While the rest of the area is mostly rocky, hilly and rugged. The general elevation of the region ranges between 150 and 1050 in above MSL. The western part comprising the basaltic plateau is between 300 and 600 m. elevation above MSL. It is characterised by scarp slopes and is traversed by subparallel drainage lines. The eastern part covering Bhandara, Chandrapur and Gadchiroli districts marks the transition between trappens and pre-cambrian landmarks which receives higher rainfall and has dissectal rolling topography which has rich natural vegetation. Physiographically Vidarbha region is divided into Purna basin and Wardha-Wainganga basin. Gavilgarh hills, the piedmont region and Purna plain region are the parts of Purna basin while Arvi upland, Ramtek upland, Nagpur plain, Upper Wardha plain, lower Wardha plain, Wardha-Wainganga divide, Upper Wainganga plain, lower Wainganga plain, Pranhita, Godavari-Indravati loop and eastern hills are the parts of the Wardha - Wainganga plains.

v) The region forms a part of the peninsular India. This region possesses rock formation from oldest Pre-cambrian to recent alluvial. Geological point of view Vidarbha region is rich in mineral resources. Out of total mineral bearing areas in Maharashtra near about 70% mineral bearing areas falls in Vidarbha region. Nagpur, Bhandhara, Chandrapur, Gadchiroli and Yavatmal are the important mineral bearing districts in Vidarbha.

vi) The climate undoubtedly holds the key to regional diversity. Climate plays very vital role in deciding the clothing pattern, agricultural pattern, occupational structure of any region. The climate of the Vidarbha region is
tropical monsoon type. The annual rainfall varies from 750-1450mm, distributed over 60-70 days. The mean annual air temperature varies from 25°-27°C. During May the region witnesses high temperature of 45°C, While in the month of December and January temperature falls upto 8°-10°C.

vii) Coarse shallow soils are found in Melghat region of Amravati district, north-western part of Yavatmal district, northern and central part of Wardha district, northern part of Chandrapur district and southwest part of Bhandara district. These soil occupy a zone having 600-750mm. of rains and are neutral or alkaline in reaction. The medium black soil occupy the eastern margin of the plateau. This type of soil is mainly found in Amravati and Akola district, southern part of Nagpur district and western part of Chandrapur district. The deep black soils popularly known as black cotton soil occurs in the areas of moderate rainfalls. This type of soil primarily confine along almost all the banks of the rivers, in Vidarbha region. The eastern part of the Gadchiroli district posses lateritic soils. Presence of iron in the parent rock is a prerequisite for the development of laterites. The soil is highly acidic showing pH value of 5-6. Reddish, yellowish and Brownish soils are found in eastern part of Chandrapur and Bhandara districts. The outer flood plains of Wardha Wainganga carry a brown gray soils. Absense of iron and moderate rainfall have produced this kind of soil.

viii) About 28% of the total area of Vidarbha region is covered by forest. Despite high rainfall and suitable edaphic conditions, many parts in the region do not support forest due to human interference, rugged terrain and other constraints. Gadchiroli, Chandrapur, Bhandara, northern part of Amravati, Nagpur and Yavatmal accounts more than 90% forest area of the Vidarbha region.
- References -


8. Ibid, pp. 186.


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